Firebox III Hardware Guide

Firebox 500, Firebox 700, Firebox 1000, Firebox 2500, Firebox 4500

Copyright and Patent Information

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Notice to Users

Contents

Hardware Guide

The WatchGuard Firebox III is a specially designed and optimized security appliance. Solid-state architecture removes the risk of hard-drive failure and disk crashes. Three independent network interfaces allow you to separate your protected office network from the Internet while providing you an optional public interface for hosting Web, e-mail, or FTP servers. Each network interface is independently monitored and visually displayed on the front of the Firebox.

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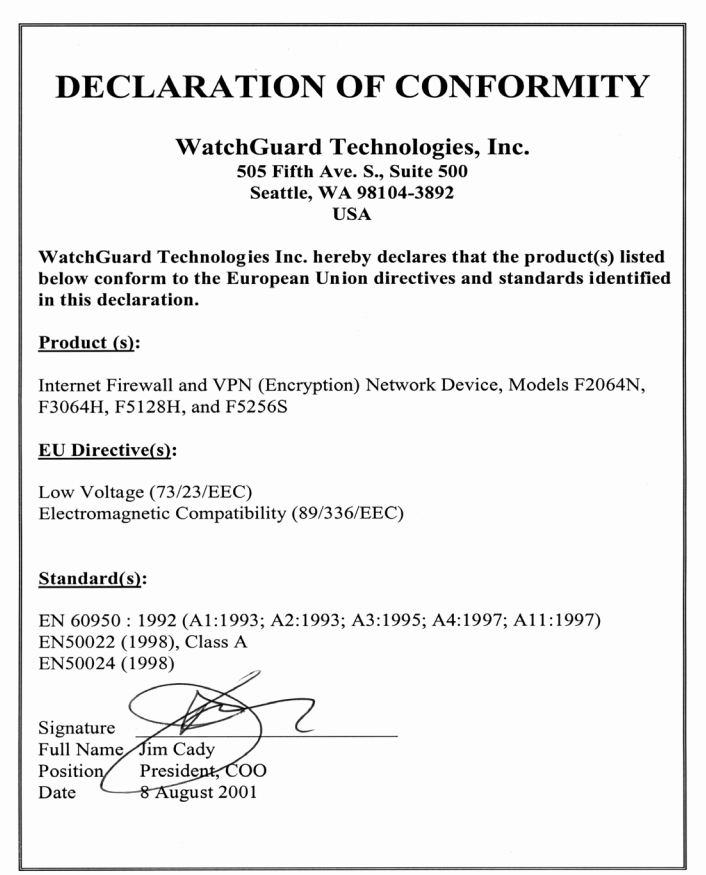

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WatchGuard Technologies, Inc.
505 Fifth Ave. S., Suite 500
Seattle, WA 98104-3892
USA

WatchGuard Technologies Inc. hereby declares that the product(s) listed below conform to the European Union directives and standards identified in this declaration.

Product (s):

Internet Firewall and VPN (Encryption) Network Device, Models F2064N, F3064H, F5128H, and F5256S

EU Directive(s):

Low Voltage (73/23/EEC)
Electromagnetic Compatibility (89/336/EEC)

Standard(s):

EN 60950 : 1992 (A1:1993; A2:1993; A3:1995; A4:1997; A11:1997)
EN50022 (1998), Class A
EN50024 (1998)

Signature _____
Full Name Jim Cady
Position President, COO
Date 8 August 2001

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- This device may not cause harmful interference.

- This device must accept any interference received, including interference that may cause undesired operation.

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The CE symbol on your WatchGuard Technologies equipment indicates that it is in compliance with the Electromagnetic Compatibility (EMC) directive and the Low Voltage Directive (LVD) of the European Union (EU).

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This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

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Installing the Firebox III

Easily installed into your network, the rack-mountable Firebox plugs in at the Internet connection of your offices to implement security policies and protection.

Hardware requirements

WatchGuard recommends physically installing a Firebox III under the following conditions:

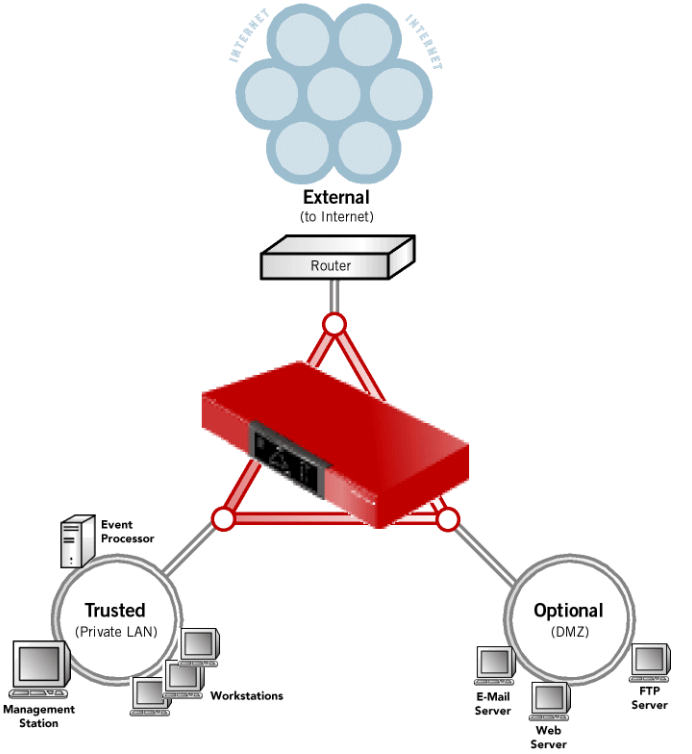
- Securely rack-mounted
- Placed in a dry, temperature-controlled environment that does not exceed 80 degrees F
- Placed in a secured environment, such as a locked LAN room, or similar space, to prevent physical compromise by unprivileged personnel
- Connected to conditioned power to prevent damage caused by power spikes and other power fluctuations

The following minimum hardware requirements pertain to the Management Station—the computer that administers the Firebox. This computer runs the Control Center software, which provides access to WatchGuard Firebox System applications.

Hardware feature	Minimum requirements (Management Station)
CPU	Pentium II
Memory	Same as for operating system. Recommended: 64 MB for Windows 98 64 MB for Windows NT 4.0 64 MB for Windows 2000 Professional 256 MB for Windows 2000 Server
Hard disk space	25 MB to install all WatchGuard modules 15 MB minimum for log file Additional space as required for log files Additional space as required for multiple configuration files
CD-ROM drive	One CD-ROM drive to install WatchGuard from its CD-ROM distribution disk

Locating a Firebox within a network

One of the first steps in installing a Firebox is determining where to place it within the network. Nearly always, a Firebox is placed directly behind the Internet router, as pictured below. This is the most effective location for the Firebox to operate correctly and protect your network.



Connecting a Firebox

After you have decided where to place the Firebox, the next task is to make all the hardware connections. See "Firebox III rear view (all models except Model 500 and 700)" on page 16 or "Firebox III rear view (Model 500 and 700)" on page 17 (depending on which model Firebox you are using) to view a figure showing the connections on the back of the Firebox.

You can connect to and initialize a new Firebox in several ways:

- Using TCP/IP. This is the quickest way to configure a Firebox in most situations.
- Using a serial cable. Use this method if you want to isolate the Firebox during configuration.
- Using a modem. Use this method if the Firebox is located remotely from the Management Station.
- Using remote provisioning. Use this method in the case where a router sits between the Management Station (the computer on which you install the WatchGuard Firebox System Control Center software) and the Firebox network connection.

Cabling a Firebox using TCP/IP

This process uses TCP/IP over Ethernet to connect and initialize a new Firebox. The Firebox will automatically obtain its IP address.

1 Place the Firebox on a desktop or in a rack in a location convenient to the external router.

2 Use the red (cross-over) cable (provided with the Firebox) to connect the Firebox Trusted interface to the same network as the computer that will act as the Firebox Management Station.
If the Firebox is to be connected to the Firebox Management Station in isolation, you must use either a hub or the red cable.

3 Install the power cord from the AC receptacle on the Firebox to a power source.

4 When prompted to do so during the QuickSetup wizard (described in "Running the QuickSetup Wizard" on page 11), select **Use TCP/IP to Configure** as the confirmation access method.

Cabling a Firebox for serial cable initialization

This process requires that you manually create an IP address.

1 Place the Firebox in a location convenient to the Management Station.

2 Use the blue serial cable to connect the Firebox console port with the Management Station COM port. Use the red crossover cable to connect the Trusted interface to the Management Station Ethernet port.

3 Install the power cord from the Firebox AC receptacle to a power source.

4 When prompted to do so during the QuickSetup wizard (described in "Running the QuickSetup Wizard" on page 11), select **Use Serial Cable to Assign IP Address** as the configuration access method.

Initializing a Firebox using a modem

The following are required when using a modem:

- Management Station running Firebox System 4.6 or later and equipped with a modem, Dial-Up Networking software, and a working telephone line.
- Any Firebox III model, equipped with an external modem, a modem cable, and a working telephone line.

1 Use the blue null serial cable and adaptors included with the Firebox to connect the Firebox CONSOLE port and external serial port in a loopback configuration.

2 Turn the power on the Firebox off, then on. Confirm that the SysB light is lit.
The Firebox is now ready to accept the out-of-band connection.

Initializing a Firebox using remote provisioning

Use remote provisioning to initialize a Firebox in the case where a router sits between the Management Station and the Firebox network connection. Because of the flexibility of being able to initialize a Firebox from virtually any location on a network, remote provisioning is a very versatile option. However, it has the following restrictions:

- During provisioning, the Firebox and the router should be the only devices on the network.
- You must be able to flush the local router's ARP tables, preferably by rebooting the router.
- The Firebox must be initialized with Firebox System 4.6 or later.

Make sure the following conditions exist prior to using remote provisioning:

- The Firebox is attached as the only device behind a working router.

- The Management Station is running Firebox System 4.6 or later, which has IP connectivity to the network on which the Firebox is connected.
- The network address and the netmask of the net behind the router are known.
- One or more unused IP connections are behind the router.

During remote provisioning, one light appears on the front panel Traffic Volume Indicator (on Models 1000, 2500, and 4500 only) for each successful IP address the Firebox claims. The Firebox can claim up to eight addresses.

The Process Load Indicator on Models 1000, 2500, and 4500 marks the total number of different MAC addresses the Firebox sees on the cable. If the number exceeds eight, the Firebox stops claiming addresses; the SysA light remains lit. This feature is designed to prevent an uninitialized Firebox from claiming addresses on a busy LAN. (If this happens, reboot into Enhanced System Mode and try again.)

1 Attach both the Firebox External interface and the router's interface to a common local area network, or use the red cross-over cable to connect them directly.

2 Turn the Firebox off and then back on. Allow time for the Firebox to boot. Confirm that there is a flashing pattern with a red, blinking, Trusted deny light on the lower edge of the Security Triangle Display.

3 Flush the router ARP cache.
Rebooting the router will usually accomplish this.

4 From Policy Manager on the Management Station, select **File ⇒Open Firebox**.

5 Select an unused IP address behind the router on the same network to which the Firebox is attached. Set the Firebox's read-write passphrase to **wg**. Set the timeout to 90 seconds. Click **OK**.

6 If the procedure is successful, the open operation on the Management Station completes. You can then follow regular procedures described in the *User Guide* to configure and download a new flash image to the Firebox.

Running the QuickSetup Wizard

The final step of the WatchGuard Firebox System installation is to run the QuickSetup wizard. The QuickSetup wizard creates a basic configuration

file and saves it to the primary area of the Firebox flash disk. The Firebox loads the primary configuration file when it boots. The QuickSetup wizard also writes a basic configuration file called `wizard.cfg` to the Management Station hard disk.

By default, the QuickSetup wizard starts automatically after you finish installing the Firebox System software. To manually start the QuickSetup wizard from the Windows desktop, select **Start ⇒Programs ⇒ WatchGuard ⇒QuickSetup Wizard**.

For details on running the QuickSetup wizard, see *Firebox System Install Guide*.

Post-installation steps

The Firebox can now communicate with the Management Station over the network. Perform the following post-installation steps:

1 If you initialized the Firebox using the serial cable, you must now place the Firebox within your network. Initially, this must be done over the Trusted interface.

The most common location for the Firebox is physically between the Internet router and connections to your trusted and optional networks. See "Locating a Firebox within a network" on page 8.

2 Connect the Ethernet lines to the Firebox Trusted, External, and Optional interfaces as appropriate.

Specific connections vary according to the drop-in or routed network configuration created. You are not required to connect the Optional interface if it is not part of your network configuration.

3 Reboot the Management Station.

If you designated the Management Station as the primary event processor, the LiveSecurity Event Processor starts.

4 You can now customize your security policies. See the *User Guide* for additional configuration instructions.

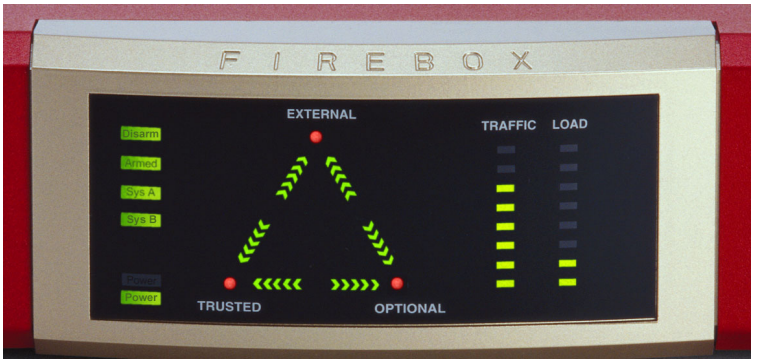
Hardware Description

The Firebox III has indicator lights on the front and connections on the back.

Firebox III front view (all models except Model 500 and 700)

Indicators for the Firebox III Model 1000, Model 2500, and Model 4500 are on a central back-lit indicator panel. The following photograph shows the entire front view.

The photograph below shows a close-up of the indicator panel. From the left, the indicators are as described on the next page.



Disarm

Red light indicates the Firebox detected an error, shut down its interfaces, and will not forward any packets. Reboot the Firebox.

Armed

Green light indicates the Firebox has been booted and is running.

Sys A
Indicates that the Firebox is running from its primary user-defined configuration.

Sys B
Indicates that the Firebox is running from the read-only factory default system area.

Power
Indicates that the Firebox is currently powered up.

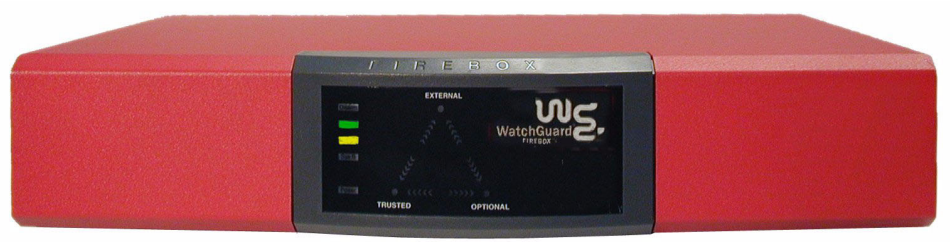
Security Triangle Display
Indicates traffic between Firebox interfaces. Green arrows briefly light to indicate allowed traffic between two interfaces in the direction of the arrows. A red light at a triangle corner indicates that the Firebox is denying packets at that interface.

Traffic
A stack of lights that functions as a meter to indicate levels of traffic volume through the Firebox. Low volume indicators are green, while high volume indicators are yellow. The display updates three times per second. The scale is exponential: the first light represents 64 packets/second, the second light represents 128 packets/second, increasing to the eighth light which represents 8,192 packets/second.

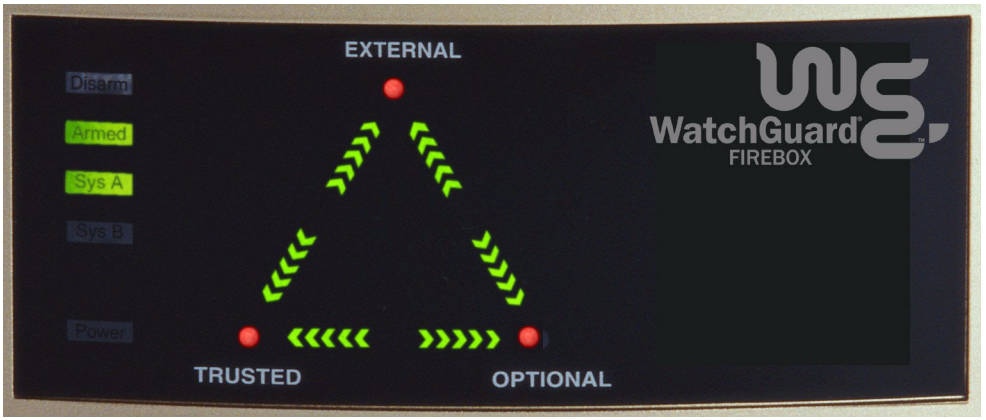
Load
A stack of lights that functions as a meter to indicate the system load average. The system load average is the average number of processes running (not including those in wait states) during the last minute. Low average indicators are green, while high average indicators are yellow. The display updates three times per second. The scale is exponential with each successive light representing a doubling of the load average. The first light represents a load average of 0.15. The most significant load factor on a Firebox is the number of proxies running.

Firebox III front view (Model 500 and 700)

Firebox III Model 500 and 700 indicators are on a central back-lit indicator panel. The following photograph shows the entire front view.



The following photograph shows a close-up of the indicator panel. From the left, the indicators are as described below.



Disarm

Red light indicates the Firebox detected an error, shut down its interfaces, and will not forward any packets.

Armed

Green light indicates the Firebox has been booted and is running.

Sys A

Indicates that the Firebox is running from its primary user-defined configuration.

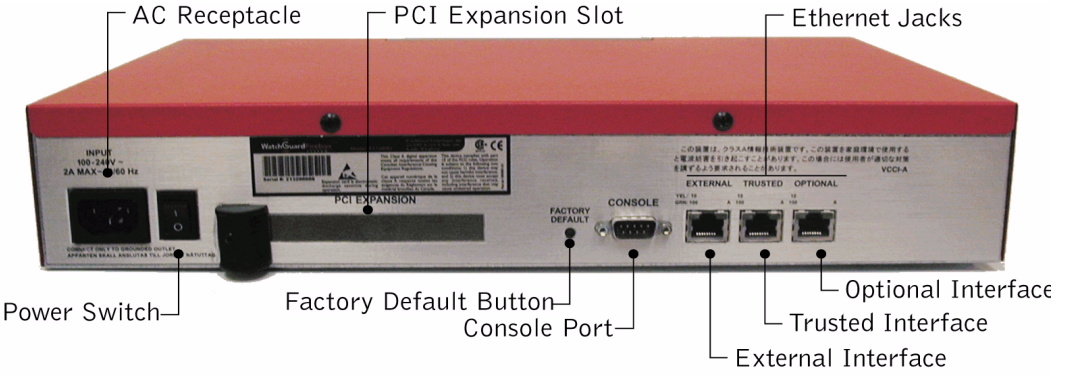
Sys B
Indicates that the Firebox is running from the read-only factory default system area.

Power
Indicates that the Firebox is currently powered up.

Security Triangle Display
Indicates traffic between Firebox interfaces. Green arrows briefly light to indicate allowed traffic between two interfaces in the direction of the arrows. A red light at a triangle corner indicates that the Firebox is denying packets at that interface.

Firebox III rear view (all models except Model 500 and 700)

The rear view of the Firebox III Model 1000, Model 2500, and Model 4500 contains ports and jacks for connectivity as well as a power switch. From the left, rear panel features are as described on the next page:



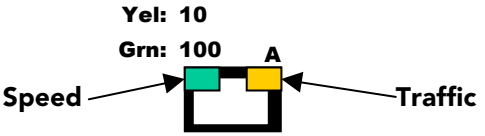
AC Receptacle
Accepts the detachable AC power cord supplied with the Firebox.

Power Switch
Turns the Firebox on or off.

PCI Expansion Slot
Reserved for future use.

Factory Default
This button is active only during the boot process. To boot the Firebox to SYS B, press this button and hold it down for 20-60 seconds (or until you see the Sys B light come on).

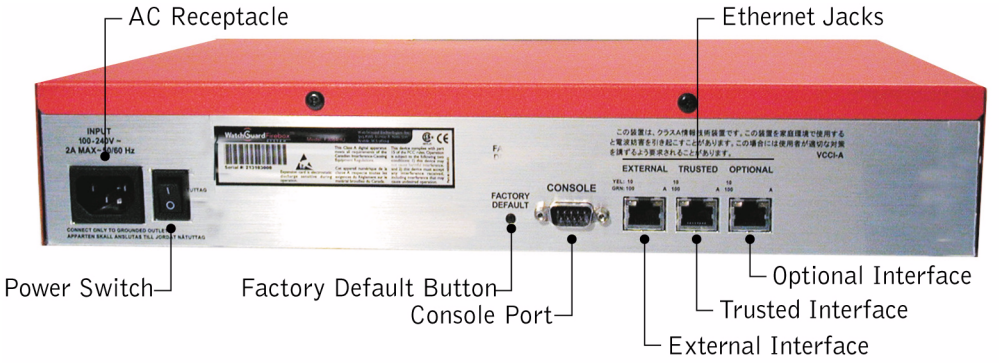
Console Port
Connects to the Management Station or modem through a serial cable supplied with the Firebox using PPP.



Ethernet Ports
(Shown on the previous page) Indicators for each network interface display link status, card speed, and activity. The network interface cards (NICs) are auto-sensing and adapt to wire speed automatically. The speed indicator lights when there is a good physical connection to the Firebox. When the card runs at 10Mbit, the speed indicator is yellow. When the card runs at 100 Mbit, the speed indicator is green. The amber traffic indicator blinks when traffic is passing through the Firebox.

Firebox III rear view (Model 500 and 700)

The rear view of the Firebox III Model 500 and 700 contains ports and jacks for connectivity as well as a power switch. From the left, rear panel features are as described below:



AC Receptacle

Accepts the detachable AC power cord supplied with the Firebox.

Power Switch

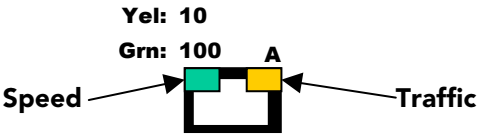
Turns the Firebox on or off.

Factory Default

This button is active only during the boot process. To boot the Firebox to SYS B, press this button and hold it down for 20-60 seconds (or until you see the Sys B light come on).

Console Port

Connects to the Management Station or modem through a serial cable supplied with the Firebox using PPP.



Ethernet Jacks

(Shown above) Indicators for each network interface display link status, card speed, and activity. The network interface connections

(NICs) are auto-sensing and adapt to wire speed automatically. The speed indicator lights when there is a good physical connection to the Firebox. When the card runs at 10Mbit, the speed indicator is yellow. When the card runs at 100 Mbit, the speed indicator is green. The amber traffic indicator blinks when traffic is passing through the Firebox.

Physical specifications (All models except Model 500 and 700)

- Three RJ-45 10/100Tx Ethernet interfaces
- 1 DB-9 serial port
- PCI expansion option
- 500 MHz AMD K6-III processor
  300 MHz AMD K6-II processor (model 1000 only)
- 64-MB SDRAM (model 1000)
  128-MB SDRAM (model 2500)
  264-MB SDRAM (model 4500)
- 8-MB flash disk
- 100-240 VAC Autosensing, 50/60 Hz
- Height: 2.85”; Width: 15.5 “; Depth: 10.5”

Physical specifications (Model 500 and 700)

- Three RJ-45 10/100Tx Ethernet interfaces
- 1 DB-9 serial port
- 233 MHz AMD K6-II processor
- 64-MB SDRAM
- 8-MB flash disk
- 100-240 VAC Autosensing, 50/60 Hz
- Height: 2.85”; Width: 15.5 “; Depth: 10.5”

Cross-over cabling

To connect a Firebox to a hub or switch, use a standard, straight-through cable. However, if you plan to connect a Firebox directly to a router, either purchase or build a cross-over cable for RJ-45 (Cat5) wire.

The tables below provide pin-out descriptions for both a straight-through and a RJ-45 (Cat5) cross-over cable.

Pin Number	Pin Number
1 (Transmit Plus)	1 (Transmit Plus)
2 (Transmit -)	2 (Transmit -)
3 (Receive Plus)	3 (Receive Plus)
6 (Receive -)	6 (Receive -)
4,5,7,8	Not Used

Pin Number	Pin Number
1 (Transmit Plus)	3 (Receive Plus)
2 (Transmit -)	6 (Receive -)
3 (Receive Plus)	1 (Transmit Plus)
6 (Receive -)	2 (Transmit -)
4,5,7,8	Not Used

Firebox System Area

WatchGuard ships the Firebox III with a fixed, baseline set of functionality stored on the read-only system area of the Firebox flash disk memory. It is possible to start the Firebox using this read-only system area when the primary user area is misconfigured or corrupted. This functionality allows you to:

- Troubleshoot problems where all access to the Firebox is lost

- Reset Firebox passphrases when you do not know or have forgotten them

Fireboxes shipped before LiveSecurity System 4.1 shipped with the original, standard functionality called the read-only system area. Fireboxes shipped with LiveSecurity System 4.1 or later contain both the older functions and a new set of features designed to enhance usability, called the enhanced system area.

Read-only system area

The Firebox III has a read-only system area that the unit can be booted into using the serial cable shipped with the Firebox. When a Firebox is running from the read-only system area, the Sys B light and the Armed light are both illuminated.

With the Firebox running the read-only system area, use one of two methods to initialize the Firebox and prepare it for configuration:

- Factory default switch on back
- Out-of-band, using a modem
- Direct, using a serial cable

However, do not attempt to use the read-only system area configuration file as a base or template for your working configuration. It will not work. You must create a new configuration file using the QuickSetup Wizard or open an existing configuration file.

Enhanced System Mode

By default, Firebox III boots into an Enhanced System Mode. When a Firebox is running from the Enhanced System Mode, the Sys A light on the front panel flickers yellow in a repeating pattern.

Managing flash disk memory

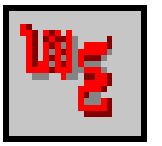
The Flash Disk Management Tool performs specific tasks involving the Firebox flash memory. The flash disk is divided into three areas:

- System (SysB)— Contains a permanently stored, basic Firebox software image with the passphrase **wg**.

- Primary (SysA)— Contains the Firebox software image used in normal operation and the enhanced read-only system area.
- Backup— Contains the Firebox software image.

Making a backup of the Firebox software

To ensure that you always have a backup version of the current Firebox software, copy the image stored in the primary area to the Firebox flash disk backup area. From Control Center:



1 Click the Control Center Main Menu button (shown at right), which is located on the upper-left corner of Control Center.

2 Select **Tools ⇒Advanced ⇒Flash Disk Management**.

3 Select **Make Backup of Current Image**. Click **Continue**.
A verification prompt appears. Verify that the Management Station connects to the Firebox Trusted interface either over the network (TCP/IP) or via a modem using out-of-band management.

4 Click **Yes**.
The Connect To Firebox dialog box appears.

5 Use the Firebox drop list to select a Firebox or type the IP address used by the Management Station to communicate with the Firebox. Enter the configuration (read/write) passphrase. Click **OK**.
When the backup is successful, an Operation Complete alert appears.

6 Click **OK**.
You do not need to reboot the Firebox.

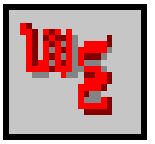
Restoring a backup configuration file

Backing up and restoring a configuration file acts not only on the configuration file but on the entire flash image. This is important to note if you are loading a new version, patch, or component onto the Firebox.

Restore the backup configuration file to the primary area of the Firebox flash disk when:

- You incorrectly overwrite the primary configuration file.
- The primary configuration file is incorrectly configured or is otherwise unusable.

Note that this procedure is possible only when a backup image is on the backup area of the Firebox's flash disk. There is no backup image on the Firebox until you copy one there.



1 Click the Control Center Main Menu button (shown at right), which is located on the upper-left corner of Control Center.

2 Select **Tools ⇒Advanced ⇒Flash Disk Management**.

3 Select **Restore Backup Image**. Click **Continue**.

A verification prompt appears. Verify that the Management Station connects to the Firebox Trusted interface either over the network (TCP/IP) or via a modem using out-of-band management.

4 Click **Yes**.

The Connect To Firebox dialog box appears.

5 Use the **Firebox** drop list to select a Firebox or type the IP address used by the Management Station to communicate with the Firebox. Enter the configuration (read/write) passphrase. Click **OK**.

The Firebox copies the backup image from the backup area to the primary area of its flash disk and reboots from the backup file.

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